

# Beyond Nuclear



Working for a world free from nuclear  
power and nuclear weapons

BEYOND NUCLEAR AT NUCLEAR POLICY RESEARCH INSTITUTE

“During my eight years in the White House, every nuclear weapons proliferation issue we dealt with was connected to a nuclear reactor program.”

– Former Vice President, Al Gore

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## **Beyond Nuclear at Nuclear Policy Research Institute (NPRI)**

Beyond Nuclear aims to educate and activate the public about the connections between nuclear power and nuclear weapons and the need to abandon both to safeguard our future. Beyond Nuclear advocates for an energy future that is sustainable, benign and democratic.

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# Welcome to Beyond Nuclear!

**Beyond Nuclear was created because the world today is moving ever more rapidly toward the increased build-up and use of nuclear reactors and nuclear weapons.** These twin nuclear threats have been separated in the minds of the public, the media and decision-makers for too long. Beyond Nuclear's mission is to help change that thinking, to dispel the myths and to lay out pathways to a world free from nuclear reactors and free from nuclear weapons.

Myths abound that nuclear power is a benign, clean energy source and that the threat presented by nuclear weapons vanished with the end of the Cold War. Instead, and especially in today's climate of perpetual fear and pre-emptive wars, the plans to expand nuclear power and the proposed increase in the U.S. nuclear weapons arsenal, place our safety in greater jeopardy than ever.

Between them, Russia and the U.S. maintain more than 2,000 nuclear missiles on hair-trigger alert, able to launch accidentally or deliberately in minutes. Reactors represent inviting terrorist targets, which, if successfully attacked, could release an enormous amount of deadly radiation into our air and water. For example, 32 U.S. reactors house their irradiated fuel rods in pools on the top level of the reactor building, outside the reinforced containment structure under a sheet metal roof. Furthermore, encouraging countries to adopt or expand commercial nuclear operations is an open invitation to nuclear weapons development.

Beyond Nuclear aims to educate new audiences about the connection between nuclear power and nuclear weapons and the necessity to permanently eliminate them. It serves as an educational tool that in turn can provide movement-building opportunities for all those concerned with providing a safer future for our children and for future generations.

The Beyond Nuclear team works with diverse partners and allies to provide the public, government officials, and the media with the critical information necessary to move humanity toward a world beyond nuclear. Our Web site at [www.beyondnuclear.org](http://www.beyondnuclear.org), along

with our printed materials and cadre of expert spokespeople serve as rich resources of information for the public, political leaders and the media. We believe it is essential to heighten awareness of these important issues, especially in the media, and to forge alliances that will build a powerful movement for a world beyond nuclear.

Beyond Nuclear endorses abolition of all nuclear weapons. Consequently, we are honored to carry on the work of Dr. Helen Caldicott, the founding president of Nuclear Policy Research Institute. Beyond Nuclear and NPRI share a common goal to raise the level of awareness about the risks of nuclear power and nuclear weapons and to promote the safer, more sustainable solutions to both of these dangerous technologies. Dr. Helen Caldicott, a renowned physician and author, has devoted the last 35 years to an international campaign to educate the public about the hazards of the nuclear age and the necessary changes in human behavior to stop environmental destruction. In addition, we are privileged to partner with some of the most knowledgeable and dedicated individuals and organizations worldwide who share Helen's passion and our collective mission.

An energy future without nuclear power is possible. Beyond Nuclear is partnering with experts in the fields of conservation, energy efficiency and renewable energy technologies, to better advance and promote the achievable choices we can make that will save the planet and save us money as well.

At the heart of Beyond Nuclear are real, human stories that put names and faces on the tragedies that can be wrought by the whole nuclear cycle from uranium mining to waste storage. You can read more about the victims of nuclear atrocities in our materials and on our Web site. And you can read more about the heroes, too, who have taken a stand, fought back and won.

We face many challenges and difficult choices, especially as the climate moves into crisis and even collapse. But let's not substitute global warming for nuclear winter! Please take a moment to read through our materials and visit our Web site. We hope you will then be ready to support our work as generously as you can.

Thank you!

*The Beyonders*

Linda Gunter, Paul Gunter, Kevin Kamps and Cindy Folkers  
*The staff of Beyond Nuclear* • [www.beyondnuclear.org](http://www.beyondnuclear.org)

# Welcome from Dr. Helen Caldicott

## FOUNDING PRESIDENT, NUCLEAR POLICY RESEARCH INSTITUTE



I am extremely pleased that Beyond Nuclear will pursue its mission under the auspices of the Nuclear Policy Research Institute.

Beyond Nuclear and NPRI share a synergistic vision: to communicate the grave threats to health, environment and safety implicit in the complexities of the nuclear industry.

The staff members of Beyond Nuclear – Paul Gunter, Linda Gunter, Kevin Kamps and Cindy Folkers – have been absolutely invaluable assets to the anti-nuclear movement over many years.

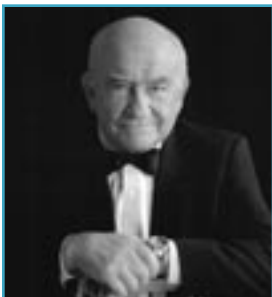
They have consistently alerted and educated the public about the many dangers posed by the operation of nuclear power. I have long been a great admirer of their work and have frequently tapped their expertise for reference material imperative for my writings and lecturing.

While I will not now be involved in the day to day operations of NPRI, I am confident that the distinguished new staff and new board of the Institute will be effective stewards of NPRI. I will continue to be a keen supporter of NPRI for long into the future.

Above all I look forward to the day when we can all celebrate the termination of both the nuclear power and nuclear weapons industries.

– Helen Caldicott

## Beyond Nuclear Launch Partners



### Honorary Chairman, Ed Asner, actor and activist

I am delighted to serve as the Honorary Chairman for Beyond Nuclear. It represents a wonderful and timely opportunity to shatter forever the myth of the “peaceful atom.” Never in our lifetimes has the deadly connection between nuclear power and nuclear weapons been more obvious or more dangerous.

Yet, never in our lifetimes have we been presented such an opportunity to make our planet a safer, kinder place. We have the technology for a sustainable future. We have the intelligence to reject nuclear warfare. We just need to take action!

So let’s act now. Because the longer any one of us goes in life without committing to the ideals he or she truly believes in, the greater the personal anger and frustration will be inside ourselves. Beyond Nuclear is an excellent idea at the absolutely correct time. I urge you to support it in any way that you can.

*Edward Asner*

Special thanks go to all our Launch Partners: Bob Backus, Ed Begley, Christie Brinkley, Susan Clark, David Cortright, James Cromwell, Kay Drey, Julie Enszer, Judi Friedman, Lou Friedman, Karl Grossman, Keith Gunter, Judy Johnsrud, Joan MacIntosh, John McEnroe, Friedrike Merck, Susan Sarandon, Marilyn Strong, Steven Strong, and Gretchen Wyler (1932-2007.) *We very much miss our beloved Gretchen Wyler who passed away on May 27, 2007.*

# The Beyond Nuclear Difference

Whether you would like to become actively involved with Beyond Nuclear or simply make a gift, here are five ways your support will make a difference.

**1 Protecting Children:** Pregnant women and children are among the most vulnerable to genetically damaging and cancer-causing radioactive elements. Children, especially, are at risk from every aspect of the nuclear chain including: radioactive releases from routine reactor operation; known leaks and spills into groundwater from reactor and nuclear weapons production sites; and the consequences of an attack or accident at a reactor and/or its waste storage units. Beyond Nuclear will campaign to ensure that standards for radiation exposure take into account the young and the unborn and that their health and safety is the priority, not the industry's profit margin.



**2 Ending Atomic Discrimination:** Uranium mining is needed for the manufacture of nuclear weapons and reactor fuel. However, uranium mining has disproportionately affected the health of Native Americans, and today new mines as well as a high-level nuclear waste dump and new nuclear reactors are threatened for Indian land. This shameful victimization needs to end. Beyond Nuclear will support those fighting for justice for uranium workers. We will also continue to help lead the fight against nuclear dumps and new nuclear reactors.



**3 Safeguarding Animals:** Radiation harms animals as well as humans. Reactors use massive quantities of water to operate, damaging aquatic ecosystems and the creatures that live there. Fish and spawn are destroyed in their millions, pulverized and scalded as they are drawn into the cooling system. Endangered sea turtles, seals, manatees, sea birds, and dozens of other species are harmed or killed every day. Beyond Nuclear will give voice to these victims by ensuring that impacts to animals are considered in all nuclear operations and new reactor licenses.



**4 Moving Toward Sustainability:** Beyond Nuclear, in partnership with experts in the field, offers guides toward a safer, more sustainable energy future. Reliance on conservation, energy efficiency and renewable energy are real solutions that can help combat climate change. The rejection of nuclear power and fossil fuels is an essential choice our world leaders must make if our planet is to have a future. Beyond Nuclear advocates for the expeditious adoption of a sustainable energy strategy today given the enormous and urgent challenges of climate change.

**5 Ending the Atomic Age:** In partnership with nuclear weapons abolition groups and notable individuals in the field, Beyond Nuclear is working to reduce the probability of a nuclear catastrophe. Through these joint efforts, Beyond Nuclear and its supporters can lend new voices to pressure world leaders, whether to reduce and eliminate nuclear weapons arsenals or to secure and attempt to permanently safeguard weapons-usable nuclear materials. With your help we can create a safer world sooner.

# The Nuclear Weapons Danger



Beyond Nuclear advocates the elimination of all nuclear weapons and argues that removing them can only make us safer, not more vulnerable.

Since 1940, the U.S. has spent more than \$5.5 trillion (in 2006 inflation-adjusted dollars) on nuclear weapons and their vast infrastructure. This irrational expense is in the name of nuclear deterrence, irrational because deterrence is a so-called theory that has never been proven in practice.

The premise of deterrence rests on the notion – held during the Cold War – that nuclear weapons are so dangerous – such a weapon of last resort – that they would never be used. If used against another nuclear nation, it would be not only an act of mass destruction but also an act of mass suicide. The prospect of using nuclear weapons against a non-nuclear country would contradict solemn pledges under international law by the U.S. government not to do so and would present politically destabilizing consequences too enormous to justify.



But now even that paradigm has changed. The U.S. has already used nuclear materials in conventional weapons in Iraq, Kuwait and the Balkans in the form of depleted uranium. This has caused untold suffering to civilians and military personnel and has left thousands of acres of land contaminated effectively forever.



Furthermore, there has been a recent shift in official U.S. policy thinking toward mounting a nuclear attack on a non-nuclear country in order to “deter” that country from acquiring nuclear weapons of its own. Meanwhile, the U.S. maintains almost 10,000 nuclear warheads while the U.S. and Russia between them host at least 2,000 nuclear missiles ready to launch within minutes.

And today, terrorists are not deterred by a nation’s nuclear weapons arsenal.

Justification by “deterrence” is an invitation to all countries to acquire nuclear weapons of their own. Why should one country not feel as “protected” as another? In reality, this escalates the risk of accidental or deliberate use and of nuclear weapons materials getting into the open market. The more nuclear weapons there are in the world, the greater the risk of a nuclear catastrophe, either by design or by accident.

In such a climate, the only way to deter use of nuclear weapons is to eliminate them. It is essential to first secure and then attempt to safeguard permanently all nuclear weapons and nuclear weapons-usable materials. Unless the production of all nuclear materials is stopped now, the threat of nuclear weapons will continue to be a threat to security and to our environment for generations to come.



# The Nuclear Power Danger

If nuclear power and fossil fuels were the only way to generate electricity, nuclear power might be a Faustian Bargain we would be forced to make. But we have excellent, cleaner, safer and cheaper alternatives to both of these energy dinosaurs.

Consequently, it makes no sense to retain existing nuclear power plants let alone build new ones. Here are some of the reasons why:

- ▶ **Climate Change:** Nuclear energy cannot address issues connected to the greenhouse gas buildup. Nuclear power plants are too costly, too large, and take too long to build to affect the problem in time. In fact, investments in nuclear power deprive other efforts such as conservation, energy efficiency and renewable energy of much-needed funding. Reactors depend on large quantities of water to operate and will not be able to function under the increasingly severe droughts, flooding and other extreme weather conditions that climate change has already set in motion.
- ▶ **Routine Releases:** All reactors release radiation into the air, water and soil and cannot be described as “emissions-free.” Children are especially vulnerable and cannot be shielded from cancer-causing radiation in the environment.
- ▶ **Security:** New reactors would increase the number of targets vulnerable to attack, a reckless policy in the current security climate. The government refuses to defend existing reactors even to the level of the 9/11 assault. Thirty-two U.S. reactors have fuel pools sitting on the reactor roof unprotected by concrete containment, an open invitation to air attack.
- ▶ **Radioactive Waste:** New reactors will produce yet more radioactive waste that in turn could travel for decades on our roads, rails and waterways, increasing the odds of disaster. Waste dumps are already targeted at poor minorities, mostly American Indians, an unacceptable act of environmental racism. Furthermore, current dumps – if opened – would soon be full with no room for newly-produced waste.
- ▶ **Accident:** New reactors, like old ones, are most vulnerable to accident. Existing evacuation plans have been found to be unrealistic. “Sheltering in place” could leave countless numbers of people exposed to radiation.
- ▶ **Reactors and Bombs:** Reactors set the stage for atomic weapons production. Therefore the world cannot free itself from nuclear weapons while reactors exist. The tensions over Iran, North Korea, India and Pakistan perfectly illustrate this point.





# Nuclear Power and Nuclear Weapons: The Inextricable Link

Nuclear energy carries with it the risk of serious accidents like Chernobyl and Three Mile Island. A radiological disaster, using a nuclear site as a target, has become more probable in the aftermath of 9/11. A typical nuclear reactor produces enough plutonium each year to make at least 40 nuclear bombs. The spread of nuclear power guarantees the spread of nuclear weapons, directly challenging the goal of achieving a sustainable abolition of nuclear weapons.

It is illogical, and impracticable, to embark on a mission to abolish either nuclear power or nuclear weapons without at the same time abolishing the other. The two technologies are inextricably linked for the following reasons:

- ▷ The creation of weapons-usable materials is an inevitable by-product of nuclear energy. Reactors produce the fissile materials used to fuel nuclear explosives. Nuclear power therefore makes proliferation more likely and verification more difficult.
- ▷ Nuclear weapons states see reactors as a means to “dispose” of their weapons waste in the form of mixed-oxide reactor fuel containing both uranium and weapons-usable plutonium.
- ▷ Less-developed countries are unlikely to give up on nuclear power unless developed countries, which have glamorized it as high technology, make a commitment to give it up. That first step may not be enough, but the job cannot be done without it.
- ▷ Reactors can become targets in conventional wars, greatly increasing the health and environmental damage of such wars. Reactors can also become targets in unconventional wars, such as acts of sabotage, releasing vast radioactive inventories that could contaminate wide areas for millennia.
- ▷ All existing reactor designs are vulnerable to accident – and those operating the longest and that have accumulated large radioactive inventories on site could release massive quantities of radiation. The impact of such releases could create casualties equivalent to an attack using nuclear weapons.
- ▷ The presence of separated and unseparated plutonium from commercial nuclear power through reprocessing will make reversion to a nuclear armed state more likely even if abolition of nuclear weapons is achieved. Thus nuclear abolition cannot be sustainable if there is use of nuclear energy at the same time.

# Toward a Sustainable Future

A world without nuclear power is attainable and all of us can make it happen.

American homes, offices, and factories contain more electricity savings potential than all the power generated by today's nuclear plants. If each U.S. household installed just one compact fluorescent light bulb, we would save as much energy as one nuclear reactor produces in a year. Installing 20 such bulbs per household could displace approximately one quarter of the nuclear reactors in the U.S. If we went further and updated the lighting, air conditioning, appliances, and other electrical systems across our economy, we would save more energy than all 104 operating U.S. nuclear reactors produce annually. In fact, cost-effective efficiency measures could save between 20% to 47% of electricity use, according to studies by five U.S. national laboratories.



Together we can eliminate nuclear power. Here's how:

**Conservation and Energy Efficiency:** Reducing wasteful use of electricity is the fastest way to cut emissions of greenhouse gases. Energy efficient homes and offices help us save money, lower energy use and prevent pollution. In fact, cost-effective efficiency measures could save more than 20% of electricity use. All of us can conserve energy by: switching to compact fluorescent light bulbs; installing energy efficient appliances, heating and cooling systems; and by unplugging or switching off lights, computers, and home electronics when not in use. This in turn can stop electricity sales growth, eliminating the argument for new nuclear power plants.



**Renewable Energy:** The vast landmass of the United States offers endless possibilities for renewable energy: off-shore and land-based wind power; solar power; tidal and wave energy; geothermal; small hydro; and biomass. Closer to home, we can install solar electric panels on our buildings, which will generate excess electricity for the grid. We can purchase "green" electricity, an option broadly available to homeowners and renters. Shifting to locally generated electricity enhances efficiency of service, reduces blackouts and brownouts and creates jobs. Renewable energy sources have the potential to meet 25% of the nation's energy needs by 2025. All of these renewable technologies can help restore political and economic stability as well as save money...and the planet.

**Climate Change:** Scientists now estimate that climate change will be a serious if not irreversible catastrophe within ten years. We have no time to waste. Conservation and efficiency cost less on a lifetime basis than the cost of generating electricity, and so should be our first step in cutting carbon emissions. Renewable energy technology can be brought on line quickly. Its capital expense is far lower than for nuclear power or fossil fuels. Coal and uranium are mined with significant impacts to human health and safety. They will eventually run out. Fuels from renewables are cleaner, safer and far less vulnerable to attack than nuclear or coal-fired power plants.

## About Nuclear Policy Research Institute

NPRI was established by Dr. Helen Caldicott to educate the American public through the mass media about the greatest single threat to our country's – and indeed the world's – public health, namely the profound medical, environmental, political and moral consequences of perpetuating nuclear weapons, power and waste.

Beyond Nuclear at NPRI continues this legacy and aims to educate and activate the public about the connections between nuclear power and nuclear weapons and the need to abandon both to safeguard our future. Beyond Nuclear advocates for an energy future that is sustainable, benign and democratic. The Beyond Nuclear team works with diverse partners and allies to provide the public, government officials, and the media with the critical information necessary to move humanity toward a world beyond nuclear.

## Founding President

Dr. Helen Caldicott

## The Board

Bob Backus, Esq  
Kay Drey  
Lou Friedman  
Karl Grossman

Judith Johnsrud, Ph.D  
*(Note: new board members may be added periodically. Please check our Web site for updates at: [www.beyondnuclear.org](http://www.beyondnuclear.org).)*

## The Staff

Paul Gunter  
*Nuclear Reactors*

Kevin Kamps  
*Radioactive Waste*

Cindy Folkers  
*Radiation and Health, Administration*

Linda Gunter  
*Media and Development*

## Expertise

Reactor safety and security; regulatory watchdog; new and existing reactors; radiation and health; climate change; wildlife impacts

High-level waste management and transportation; Congress watchdog; new and existing reactors; climate change; federal subsidies; decommissioning; Great Lakes

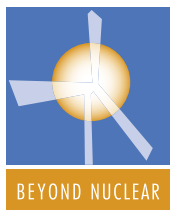
Radiation impacts on health; Congress watch; federal subsidies; climate change; energy policy

Media, marketing and public relations; fundraising and development; wildlife impacts



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It was written and edited by Linda Gunter with special editing help from Lou Friedman. Selected texts were also reviewed and edited by Helen Caldicott, Nuclear Policy Research Institute; Paul Gunter, Beyond Nuclear; Michael Mariotte, NIRS; Alistair Millar, Fourth Freedom Forum; Bill Prindle, American Council for an Energy Efficient Economy; Chris Shuey, Southwest Research and Information Center; and Steve and Marilyn Strong; Solar Design Associates. First and third photos on page 10 by Gabriela Bulisova. Printed on recycled paper using soy-based inks and 10% wind energy.